

BUNDESREPUBLIK DEUTSCHLAND

URKUNDE

über die Eintragung des
Gebrauchsmusters

Nr. 202 06 340.2

IPC: B60R 21/22

Bezeichnung:
Gassackmodul

Gebrauchsmusterinhaber
TRW Occupant Restraint Systems GmbH & Co. KG, 73553
Alfdorf, DE

Tag der Anmeldung: 22.04.2002

Tag der Eintragung: 29.08.2002



Der Präsident des Deutschen Patent- und Markenamts

Dr. Schade

TRW Occupant Restraint Systems GmbH & Co. KG
Industriestrasse 20
D-73553 Alfdorf

5 Ref: T 10015 DE

A Gas Bag Module

10 The invention relates to a gas bag module with a gas generator and with a rigid housing, in which the gas generator is arranged, at least two gas outflow channels being constructed in the housing.

15 Gas bags, especially those for protecting vehicle occupants from lateral impact, are being increasingly divided into several chambers. Partly, these chambers are of differing size, but partly also the requirement is set that the chambers are to have differing internal pressures. For this, it is necessary to introduce the gas emerging from the gas generator of the gas bag module into the individual chambers of the gas bag, in line with specific objectives.

It is an object of the invention to ensure such a defined gas distribution.

20 This is achieved in a gas bag module with a gas generator and with a rigid housing, in which the gas generator is arranged, by at least two gas outflow channels being formed in the housing, the openings of which, directed towards the gas generator and separated from each other by a wall, adjoin each other, the gas generator having a connected gas outflow zone, each of the channel openings having a section of the gas outflow zone associated with it, and the housing being constructed so that the gas emerging from the
25 sections of the gas outflow zone can only flow into the channel associated with the respective section. In other words, therefore, the gas emerging from the gas generator is distributed to gas outflow channels by the housing surrounding the gas generator directly on the emerging of the gas. These gas outflow channels can then direct the gas for example into the respective specific chambers of a gas bag. As the gas is directly led off
30 after it has emerged, a high compression stress of the housing is avoided.

- 2 -

Preferably, the wall which separates the openings from each other lies against the gas generator, in order to separate the two channel openings from each other with respect to flow.

5 It is particularly favourable if the wall is a rib constructed on the housing. In this case, through the construction of the housing, in particular through the positioning of the rib, a gas distribution can be established in line with specific objectives. For this purpose, it is particularly advantageous if the housing is a plastic housing in one piece, preferably an injection die casting. This construction makes it possible to carry out an adaptation of the gas distribution to various applications, for example for differing gas bags for various
10 types of vehicle, solely through the shape of the housing. Advantageously the same type of gas generator can be used for all the different purposes of application.

15 The quantity of gas flowing out from the gas generator may also be distributed to the channels in a simple manner in proportions of differing amounts by the channels being constructed and arranged accordingly. For this, the wall which separates the openings of the channels from each other merely has to be positioned in the housing at the corresponding site of the gas outflow zone. As the gas flows directly from the gas generator into the channels, there is no intrusive influencing of the gas outflow by the emerging gas. Thus, a ratio of the proportions of greater than 60:40 can be achieved in a simple manner.

20 The connected gas outflow zone may have a very large number of outflow openings, which are constructed for example as rows of holes in the wall of a filter pipe of the gas generator. Of course, it is also possible for the gas generator to have several outflow zones, separated from each other spatially and respectively connected. In this case, provision can be made that only one of the outflow zones is active, whilst the others are
25 closed, for example by projections constructed in the housing, which close the respective outflow openings. Of course, it is also possible that channels separated in turn from each other spatially and with respect to flow by a wall are associated with the other connected gas outflow zone(s) but which is/are separated from the first connected gas outflow zone, which channels in turn carry gas away from the gas generator for specific purposes
30 of application. For the invention, it is merely essential that the gas which flows out from

- 3 -

the respective section of an outflow zone associated with a channel, can only arrive into this channel.

In an embodiment of the invention, the gas generator is a tubular gas generator, and the gas outflow zone preferably extends only over a portion of the periphery of the gas generator. With this arrangement, it is particularly simple to place the openings of the channels and the wall lying between them.

The gas bag module is preferably a side gas bag module, in which the gas generator is arranged approximately in the centre of the extent of the side gas bag, and in which the channels constructed in the housing introduce the gas in chambers of the gas bag without long feed lines.

Further features and advantages of the invention will be apparent from the following description of an example embodiment in connection with the enclosed drawings, in which:

- Figure 1 shows a diagrammatic sectional drawing of a gas bag module according to the invention; and

- Figure 2 shows a diagrammatic view, partially in section, of a gas bag module according to the invention.

In Figure 1, a gas bag module 10 is illustrated, which can be used for example as a so-called middle module for a side gas bag (window bag). In this case, the gas bag module would be arranged approximately in the middle of the longitudinal extent of the gas bag and could be used, for example, for the filling of two chambers of the gas bag.

The gas bag module 10 has a rigid housing 12 which is preferably produced in one piece from plastic by injection moulding. A mounting 14 for a gas generator 16 is constructed in the housing 12.

The gas generator 16 shown here is a commercially available tubular gas generator with a combustion chamber 18 and a filter chamber 20 surrounding the combustion chamber 18. In the outer wall of the filter chamber 20, outflow openings 22 are provided,

- 4 -

through which gas generated in the combustion chamber can leave the gas generator 16. The outflow openings 22 are arranged so that they form a connected gas outflow zone 24.

In the housing 12, two gas outflow channels 26 are constructed, which respectively have an opening 28 directed toward the gas generator, and also an opening 30 directed for example towards a gas bag. The two openings 28 of the gas outflow 26 are separated from each other spatially and with regard to flow by a wall 32 which is constructed as a rib of the housing 12. The wall 32 forms an integral component of the housing.

The channel openings 28 are arranged so that the wall 32 lies against the outer wall of the filter chamber 20 of the gas generator 16. In addition, the housing 12 is constructed so that a section 34, 34' of the gas outflow zone 24 is associated with each of the openings 28. The wall or sections of the housing 12 surrounding the openings 28 seal in as gas-tight a manner as possible with the gas generator 16. This leads to gas, flowing out from the outflow openings 22, which flows out from one of the sections 34, 34', only being able to flow into the gas outflow channel 26 associated with this section 34, 34', or the opening 28 thereof. After the outflow openings 22 of the gas generator 16, no gas equalizing chamber is provided in the housing 12. The gas emerging from the outflow openings 22 flows directly into one of the channels 26. In this way, the gas emerging from the gas outflow zone 24 is already distributed directly to the gas outflow channels 26 on emerging from the gas generator 16. Through the arrangement of the wall 32, the extent of the sections 34 associated with the respective gas outflow channels 26 and hence the quantity of gas flowing into the respective gas outflow channels 26, can be set in a finely graduated manner. Also, an unequal distribution of the quantities of gas to the outflow channels 26 can be achieved; in particular, a ratio of outflow quantities of greater than 60:40 can be achieved in a simple manner.

In this way, for example, chambers of a gas bag of unequal size can be inflated in an identical space of time, or chambers of the gas bag can be filled to specific objectives, having different internal pressures. Gas can be drawn off equally well for a different purpose.

- 5 -

If, as in the example embodiment illustrated here, a row of outflow openings 22 is provided in the gas outflow zone 24, the wall 32 can be arranged so that it completely covers one or more of the outflow openings 22. Thus, the separation of the gas streams with regard to flow can be achieved in a simple manner.

5 Other components may be also be formed on the housing 12, for example fastening openings 36, via which the gas bag module can be connected with the vehicle.

Preferably, a gas generator 16 is used, which only has one gas outflow zone 24, which extends only over a portion of the periphery of the gas generator 16. However, it is also possible to use a gas generator with several gas outflow zones. In this case, the
10 housing is preferably constructed so that the outflow openings of a gas outflow zone 24' are closed by special constructions of the housing 12, for example by projections 38, so that no gas can emerge from the gas outflow zone 24'.

Alternatively, of course a further group of gas outflow channels (not shown here) can be joined to a further gas outflow zone 24', the gas flowing out from sections of the gas
15 outflow zone 24 in turn only being able to flow into the channels associated with the respective sections.

The housing may be formed completely in the injection moulding tool, so that a further subsequent processing can be substantially dispensed with. Owing to the possibility of simple adaptation of the housing, the invention is also suitable for the use
20 of gas generators with 25 mm diameter.

Claims

1. A gas bag module with a gas generator (16) and with a rigid housing (12), in which the gas generator (16) is arranged,

at least two gas outflow channels (26) being constructed in the housing (12), the openings of which (28), directed towards the gas generator (16) and separated from each other by a wall (32), adjoin each other,

the gas generator (16) having a connected gas outflow zone, (24), a section (34, 34') of the gas outflow zone (24) being associated with each of the openings (28),

and the housing (12) being constructed so that the gas emerging from the sections (34, 34') of the gas outflow zone (24) can only flow into the channel (26) associated with the respective section (34, 34').

2. The gas bag module according to any of the preceding claims, characterized in that the wall (32) lies against the gas generator (16).

3. The gas bag module according to any of the preceding claims, characterized in that the wall (32) separates the openings (28) from each other spatially and with regard to flow, and that the wall (32) is a rib constructed on the housing (12).

4. The gas bag module according to any of the preceding claims, characterized in that the housing (12) is a plastic housing in one piece.

5. The gas bag module according to Claim 4, characterized in that the housing (12) is an injection die casting.

6. The gas bag module according to any of the preceding claims, characterized in that the channels (26) are constructed and arranged so that the portions of the quantity of gas flowing out from the gas generator (16), which flow into the individual channels, are unequal.

7. The gas bag module according to Claim 6, characterized in that the ratio of the portions is greater than 60:40.

- 7 -

8. The gas bag module according to any of the preceding claims, characterized in that the gas outflow zone (24) has several outflow openings (22).

9. The gas bag module according to any of the preceding claims, characterized in that the gas generator (16) is a tubular gas generator.

5 10. The gas bag module according to Claim 9, characterized in that the gas outflow zone (24) extends only over a portion of the periphery of the gas generator (16).

1 / 2

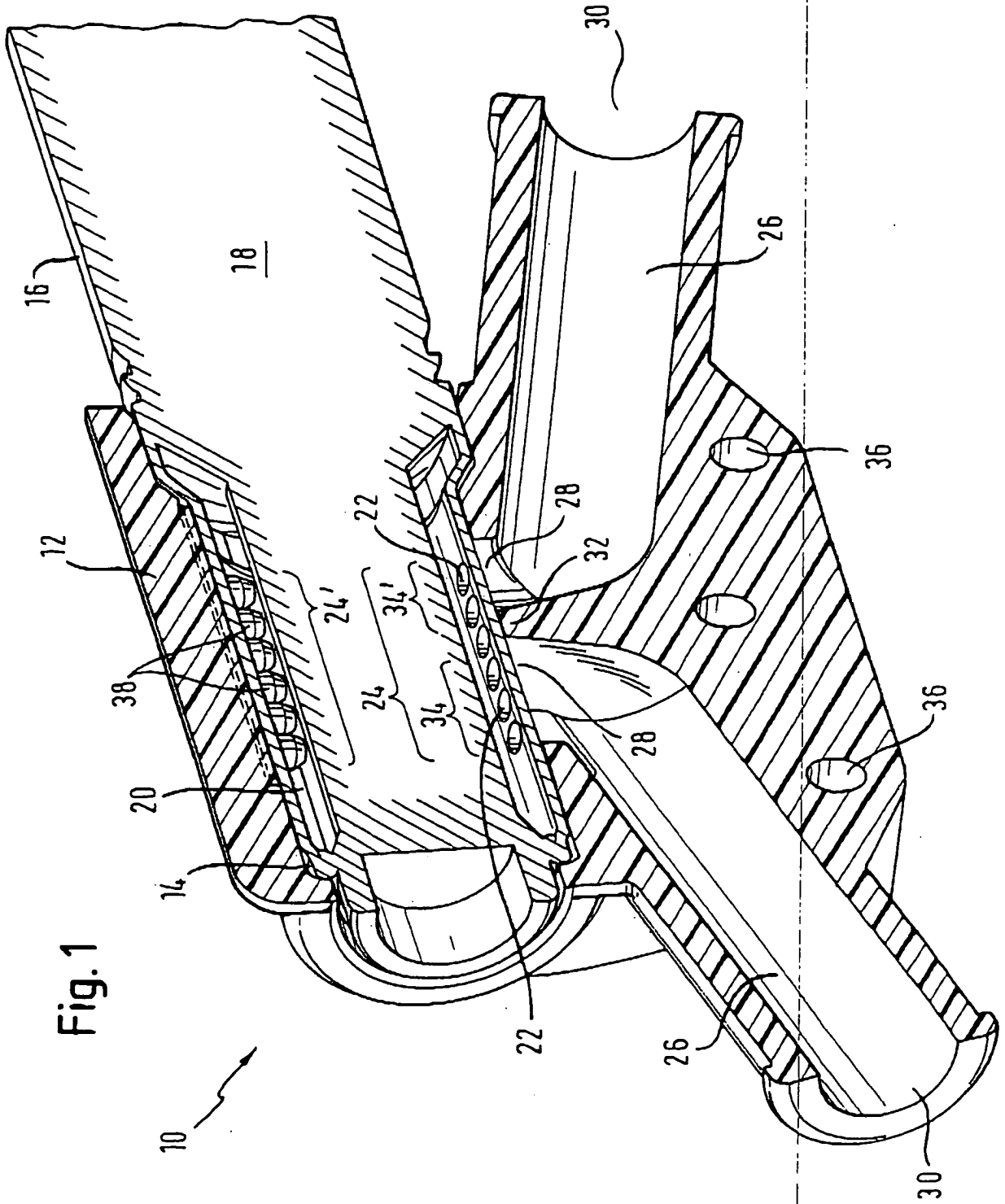


Fig. 1

10

2 / 2

Fig. 2

